

## Appendix 4.7A

### Photovoltaic Evaluation

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January 15, 2016

#### Assessment of Photovoltaic Potential for Proposed NGA West Site Locations:

A brief evaluation into the photovoltaic potential for the proposed St. Louis City, St. Clair County, Mehlville and Fenton project sites resulted in little discernable differences in terms of system size and capacity. According to the Nation Renewable Energy Laboratory (NREL), the photovoltaic solar resource for the associated areas of Missouri and Illinois is 4.5 to 5.0 kWh/m<sup>2</sup>/Day. There is no significant difference in solar resource between the four proposed project sites.

The physical size of the array(s) could change from site to site depending on the final building roof construction (sloped or flat), orientation of the facility, specified landscaping features, and parking lot design. The following calculations were developed utilizing the site plans depicted in the Prospective Sites Master Plan Final Submission dated October 2015. For the roof mounted photovoltaic systems, a preliminary calculation resulted in the following array sizes: Main Operations Building 165kW, Central Utility Plant 40kW, Future Data Center 35kW and Visitor Control Center 7kW. These calculation are a result of utilizing 60% of the projected building footprint square footage for the installation of a roof mounted photovoltaic system and are not site specific.

Preliminary calculations for elevated photovoltaic array systems, for use above parking areas, resulted in the following array sizes: Parking Garage 215kW, Visitor Parking 600kW and Surface Parking 140kW. The proposed site layout and parking lot design for all four sites generated similar sized systems. The values indicated above are an average of the four independent results. There is no significant difference in parking lot elevated photovoltaic array size between the four proposed sites.

On all four project sites, there is available green space that could be utilized to house photovoltaic systems. It appears that the Mehlville site would provide the smallest area and the St. Clair County site the largest. It does not appear that any of the sites have surrounding buildings or other infrastructure that would obscure the photovoltaic panels and results in a system generation reduction. Preliminary calculations for ground mounted photovoltaic systems were not performed however, all sites provide the necessary green space to install large photovoltaic systems.

The only key distinction between the four proposed sites in terms of photovoltaic potential lies in the proximity of the St. Clair County site to the Scott Air Force Base. Depending on the orientation of the photovoltaic arrays, a glare and reflectance problem could be created for landing aircraft. The installation of a photovoltaic system for the St. Clair County site would likely have to be approved by the Air Force.

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